

**Final  
Site-Specific Safety and Health Plan Attachment  
Site Investigation at the Ammunition Supply Point  
and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan  
Calhoun County, Alabama  
EPA ID No. AL7 210 020 562**

**Prepared for:**

**U.S. Army Corps of Engineers, Mobile District  
109 St. Joseph Street  
Mobile, Alabama 36602**

**Prepared by:**

**IT Corporation  
312 Directors Drive  
Knoxville, Tennessee 37923**

**Delivery Order CK005  
Contract No. DACA21-96-D-0018  
IT Project No. 774645**


**September 1999**

**Revision 0**

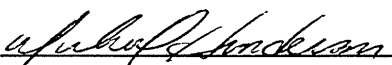
This Site-Specific Safety and Health Plan must be used in conjunction with the Installation-Wide Safety and Health Plan, Fort McClellan, Alabama.

**Final**  
**Site-Specific Safety and Health Plan Attachment Approval**  
**Fort McClellan, Calhoun County, Alabama**


I have read and approve this site-specific safety and health plan attachment for the Ammunition Supply Point and Building 4416, Fort McClellan, Alabama, with respect to project hazards, regulatory requirements, and IT Corporation procedures.

  
\_\_\_\_\_  
Jeanne Yacoub, PE  
Project Manager

9/24/99  
Date

  
\_\_\_\_\_  
Michael Henderson, CIH  
Health & Safety Manager

9/23/99  
Date

  
\_\_\_\_\_  
Jeff Tarr  
Site Coordinator

9/24/99  
Date

## **Acknowledgements**

---

The final approved version of this site-specific safety and health plan (SSHP) attachment for the Ammunition Supply Point and Building 4416 at Fort McClellan, Alabama, has been provided to the site coordinator. I acknowledge my responsibility to provide the site coordinator with the equipment, materials, and qualified personnel to implement fully all safety requirements in this SSHP attachment. I will formally review this plan with the health and safety staff every 6 months until project completion.

Stephen J. Moran for James J. Gault  
Project Manager

9/24/99  
Date

I acknowledge receipt of this SSHP attachment from the project manager, and that it is my responsibility to explain its contents to all site personnel and cause these requirements to be fully implemented. Any change in conditions, scope of work, or other change that might affect worker safety requires me to notify the project manager and/or the health and safety manager.

Stephen J. Moran for Jeff Tan  
Site Coordinator

9/24/99  
Date

## Site-Specific Safety and Health Plan Acknowledgement Form

I have been informed of, and will abide by the procedures set forth in, this site-specific safety and health plan attachment for the activities at the Ammunition Supply Point and Building 4416 at Fort McClellan, Calhoun County, Alabama.

**Date**This image shows a full page of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page, typical of notebook paper. There are no margins, text, or other markings on the page.

## Fort McClellan Gate Hours

|               |   |
|---------------|---|
| Baltzell Gate | Baltzell Road.<br>Open 24 hours daily, 7 days a week. |
|---------------|---|

## Fort McClellan Project Emergency Contacts

|   |                |
|---|----------------|
| Fire Department (on post) .....                         | Ext. 17        |
| Fire Department (off post) .....                        | (256) 820-1117 |
| Ambulance (on post) .....                               | Ext. 12        |
| Ambulance (off post) .....                              | (256) 848-2315 |
| Military Police (on post) .....                         | Ext. 5-3821    |
| Military Police (off post) .....                        | (256) 848-5555 |
| Regional Medical Center .....                           | (256) 235-5121 |
| Chemical Agent Emergencies .....                        | Ext. 17        |
| UXO Emergencies .....                                   | Ext. 17        |
| UXO Nonemergencies/Reporting Only (Ronald Levy) .....   | (256) 848-3758 |
| National Response Center .....                          | (800) 424-8802 |
| Poison Control Center .....                             | (800) 462-0800 |
| EPA Region IV .....                                     | (404) 562-8725 |
| Ronald Levy, Chief, FTMC Environmental Management ..... | (256) 848-3758 |
| Ellis Pope, U.S. Army Corps of Engineers .....          | (334) 690-3077 |
| Jeanne Yacoub, IT Project Manager .....                 | (770) 663-1429 |
| Michael Henderson, IT H&S Manager .....                 | (423) 690-3211 |
| Dr. Elaine Theriault, IT Occupational Physician .....   | (800) 229-3674 |

**Table of Contents**

---

|  | <i>Page</i> |
|--|-------------|
| List of Tables .....                         | ii          |
| List of Figures .....                        | ii          |
| List of Acronyms.....                        | iii         |
| 1.0 Site Work Plan Summary.....              | 1           |
| 2.0 Site Characterization and Analysis ..... | 2           |
| 2.1 Anticipated Hazards .....                | 2           |
| 2.2 General Site Information .....           | 3           |
| 3.0 Personal Protective Equipment.....       | 4           |
| 4.0 Site Monitoring .....                    | 6           |
| 5.0 Activity Hazard Analysis .....           | 7           |

## **List of Tables**

---

| <b>Number</b> | <b>Title</b>                                       | <b>Follows Page</b> |
|---------------|--|---------------------|
| 2-1           | Toxicological and Physical Properties of Chemicals | 3                   |
| 4-1           | Action Levels                                      | 6                   |
| 4-2           | Air Monitoring Frequency and Location              | 6                   |
| 5-1           | Activity Hazard Analysis                           | 7                   |

## **List of Figures**

---

| <b>Number</b> | <b>Title</b>          | <b>Follows Page</b> |
|---------------|-----------------------|---------------------|
| 1-1           | Hospital Location Map | 7                   |



## ***List of Acronyms***

---

|      |   |
|------|---|
| AHA  | ammunition holding area                     |
| ASP  | Ammunition Supply Point                     |
| BZ   | breathing zone                              |
| ESE  | Environmental Science and Engineering, Inc. |
| FTMC | Fort McClellan                              |
| GB   | sarin                                       |
| PID  | photoionization detector                    |
| PPE  | personal protective equipment               |
| SHP  | installation-wide safety and health plan    |
| SSHO | site safety and health officer              |
| SSHP | site-specific safety and health plan        |
| UXO  | unexploded ordnance                         |
| VX   | nerve agent                                 |

## **1.0 Site Work Plan Summary**

---

**Project Objective.** The objective of this investigation at Fort McClellan (FTMC), Calhoun County, Alabama is to collect and analyze samples from the Ammunition Supply Point (ASP) and Building 4416, Parcels 197(7) and 199(7).

### **Project Tasks**

- Conduct an unexploded ordnance (UXO) survey.
- Collect 30 surface soil samples.
- Collect 28 subsurface soil samples.
- Collect 8 groundwater samples
- Collect 8 surface water samples
- Collect 8 sediment samples
- Collect 7 depositional samples.

**Personnel Requirements.** Up to ten employees.

Note: All personnel on this site shall have received training, informational programs, and medical surveillance as outlined in the installation-wide safety and health plan (SHP) for site investigations at FTMC, and be familiar with the requirements of this site-specific SHP (SSHP). This SSHP must be used in conjunction with the SHP for FTMC.

## ***2.0 Site Characterization and Analysis***

---

### ***2.1 Anticipated Hazards***

The activity hazard analysis in Chapter 5.0 contains project-specific practices utilized to reduce or eliminate anticipated site hazards. The activity hazard analysis indicates specific chemical and physical hazards that may be present and encountered during each task from on-site operations. Below each task is a list of hazards and specific actions that will be taken to control the respective hazards. These control measures may include work practice controls, engineering controls, and/or use of appropriate personal protective equipment (PPE).

The site contains ten earth-covered magazine bunkers, five aboveground magazines, one administration building, and two ammunition holding areas (AHA).

The ASP is a high security facility located in the north-central area of the Main Post that has been in use from 1917 to the present (Environmental Science and Engineering, Inc. [ESE], 1998). The site is approximately 35 acres and is fenced and gated. Some of the magazines were constructed in 1917 and 1941. Buildings in the ASP have recently been upgraded due to the deterioration of the original structures. The primary activity at this site is storage of ordnance. Materials stored at this site likely included all munitions fired at FTMC (ESE, 1998). Red phosphorus was stored in Building 4421 (ESE, 1998). However, the building is currently reported as being empty.

Distilled mustard (HD), Sarin (GB) and nerve agent (VX) were stored in a secure igloo, Building 4416 (also known as Igloo No. 14), within the ASP (ESE, 1998). This igloo (earth-covered magazine or bunker) is identified as Parcel 199(7). Binary chemical warfare material components are currently stored in Building 4416 (Igloo No. 14) at the ASP (ESE, 1998). Building 4416 is currently managed by the Chemical Defense Training Facility and is reported to be empty.

Also, records indicate that radiological sources have been and are currently stored Building 4416 (ESE, 1998). Building 4416 was reportedly used for storage of radiological materials (atomic numbers 3 to 83, cesium-137 in sealed sources and hydrogen-3) (Roy F. Weston, Inc., 1990). According to the current radiation protection officer, Building 4416 is used for temporary storage of new radiological sources because it is an ammo bunker with good security, and remains in use

There have been no reported releases of chemical warfare agents or radiological material at the ASP. Also, there have been no reported unexploded ordnance issues at the ASP (ESE, 1998).

Table 2-1 contains the toxicological and physiological properties of chemicals anticipated or to be used at the ASP and Building 4416.

**UXO.** Prior to moving any heavy equipment on site, a UXO specialist will perform UXO avoidance to ensure the safety of field workers. The UXO avoidance procedures will be conducted in accordance with U.S. Army Corps of Engineers requirements.

## ***2.2 General Site Information***

**Location of Site.** The ASP is located in the north-central area of the Main Post. Reservoir Ridge borders the site on the east. Cave Creek flows southwest past the site on the north. The site is southeast of Landfill No. 2. The site covers an area of approximately 35 acres.

**Duration of Planned Employee Activity.** Employee activity duration is 1 month.

**Pathways for Hazardous Substance Dispersion.** Possible pathways for hazardous substances in the area are groundwater, surface water, sediment, and soils.

Table 2-1

**Toxicological and Physical Properties of Chemicals  
Ammunition Supply Point and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 5)

| Substance<br>[CAS]               | IP <sup>a</sup><br>(eV) | Odor<br>Threshold<br>(ppm) | Route <sup>b</sup> | Symptoms of Exposure   | Treatment  | TWA <sup>c</sup>              | STEL <sup>d</sup>            | Source <sup>e</sup> | IDLH<br>(NIOSH) <sup>f</sup> |
|----------------------------------|-------------------------|----------------------------|--------------------|--|--|-------------------------------|------------------------------|---------------------|------------------------------|
| Acetone<br>[67-64-1]             | 9.7                     | 13-100                     | Inh<br>Ing<br>Con  | Irritated eyes, nose, and throat;<br>headache, dizziness; dermatitis.  | Eye: Irrigate immediately<br>Skin: Soap wash immediately<br>Breath: Respiratory support<br>Swallow: Immediate medical attention  | 750 ppm<br>750 ppm<br>250 ppm | 1,000 ppm<br>1,000 ppm       | PEL<br>TLV<br>REL   | 20,000 ppm                   |
| Fuel oil<br>(diesel oil, medium) | ?                       | ?                          | Ing<br>Inh<br>Con  | Ingestion causes nausea,<br>vomiting, and cramps; depressed<br>central nervous system,<br>headache, coma, death;<br>pulmonary irritation; kidney and<br>liver damage; aspiration causes<br>severe lung irritation, coughing,<br>gagging, dyspnea, substernal<br>stress, pulmonary edema;<br>bronchopneumonia; excited, then<br>depressed, central nervous<br>system. | Eye: Irrigate promptly<br>Skin: Soap wash<br>Breath: Respiratory support<br>Swallow: Immediate medical<br>Attention<br>Aspiration: Immediate medical<br>attention  |                               |                              | PEL<br>TLV<br>REL   |                              |
| GB                               | ?                       | ?                          | Abs                | Anticholinesterase agent<br>producing cholinergic poisoning;<br>tightness in chest, wheezing,<br>increased bronchial secretion,<br>cough, breathing difficulty,<br>pulmonary edema, death; CNS<br>depression, coma, convulsion;<br>sweating; salivation, abdominal<br>cramps, heartburn, belching,<br>diarrhea, involuntary defecation.                              | Eye: Irrigate immediately. Transfer<br>to medical facility.<br>Skin: Remove victim from area<br>immediately. Flush skin and<br>clothes with bleach within 1<br>minute. Cut and remove<br>contaminated clothing, then<br>wash skin again with bleach<br>and then with soap and water.<br>Transfer to medical facility.<br>Breath: Remove from area<br>immediately. Transfer to<br>medical facility. |                               | C0.0001<br>mg/m <sup>3</sup> | AEL                 | 0.2 mg/m <sup>3</sup>        |

Table 2-1

**Toxicological and Physical Properties of Chemicals  
Ammunition Supply Point and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 5)

| Substance<br>[CAS]                                    | IP <sup>a</sup><br>(eV) | Odor<br>Threshold<br>(ppm) | Route <sup>b</sup> | Symptoms of Exposure   | Treatment   | TWA <sup>c</sup>              | STEL <sup>d</sup>             | Source <sup>e</sup> | IDLH<br>(NIOSH) <sup>f</sup> |
|---|-------------------------|----------------------------|--------------------|--|---|-------------------------------|-------------------------------|---------------------|------------------------------|
| n-Hexane<br>[110-54-3]                                | 10.18                   | 65-248                     | Inh<br>Ing<br>Con  | Lightheadedness; nausea, headache; numbness of the extremities, muscular weakness; irritation of the eyes and nose; dermatitis; chemical pneumonia; giddiness. | Eye: Irrigate immediately<br>Skin: Soap wash immediately<br>Breath: Respiratory support<br>Swallow: Immediate medical attention   | 50 ppm<br>50 ppm<br>50 ppm    |                               | PEL<br>TLV<br>REL   | 5,000 ppm                    |
| Hydrogen chloride<br>(hydrochloric acid)<br>[74-90-8] | 12.74                   | 0.255-10.6                 | Inh<br>Ing<br>Con  | Inflamed nose, throat, larynx; cough, burns throat, choking; burns eyes, skin; dermatitis; in animals; laryngeal spasm; pulmonary edema.                       | Eye: Irrigate immediately<br>Skin: Water flush immediately<br>Breath: Respiratory support<br>Swallow: Immediate medical attention |                               | C5 ppm<br>C5 ppm<br>C5 ppm    | PEL<br>TLV<br>REL   | 100 ppm                      |
| Isopropyl alcohol<br>(isopropanol)<br>[67-63-0]       | 10.16                   | 43-200                     | Inh<br>Ing<br>Con  | Mild irritation of the eyes, nose, and throat; drowsiness, dizziness, headache; dry, cracked skin.   | Eye: Irrigate immediately<br>Skin: Water flush<br>Breath: Respiratory support<br>Swallow: Immediate medical attention             | 400 ppm<br>400 ppm<br>400 ppm | 500 ppm<br>500 ppm<br>500 ppm | PEL<br>TLV<br>REL   | 12,000 ppm                   |
| Nitric acid<br>[7697-37-2]                            | 11.95                   | 0.3-1                      | Inh<br>Ing<br>Con  | Irritated eyes, mucous membranes, and skin; delayed pulmonary edema, pneumonitis, bronchitis; dental erosion.  | Eye: Irrigate immediately<br>Skin: Water flush promptly<br>Breath: Respiratory support<br>Swallow: Immediate medical attention    | 2 ppm<br>2 ppm<br>2 ppm       | 4 ppm<br>4 ppm<br>4 ppm       | PEL<br>TLV<br>REL   | 100 ppm                      |

Table 2-1

**Toxicological and Physical Properties of Chemicals  
Ammunition Supply Point and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 3 of 5)

| Substance<br>[CAS]              | IP <sup>a</sup><br>(eV) | Odor<br>Threshold<br>(ppm)  | Route <sup>b</sup> | Symptoms of Exposure   | Treatment   | TWA <sup>c</sup>  | STEL <sup>d</sup>   | Source <sup>e</sup> | IDLH<br>(NIOSH) <sup>f</sup> |
|---------------------------------|-------------------------|-----------------------------|--------------------|--|---|---|---|---------------------|------------------------------|
| Mustard gas                     | ?                       | 0.0006<br>mg/m <sup>3</sup> | Abs<br>Inh         | Garlic-like odor. Eye and respiratory tract irritation; redness of skin and blisters develop 4 to 24 hours after exposure; hoarseness, sore throat, coughing, pulmonary edema. | Treat like a thermal burn. Do not break blisters.<br>Eye: Irrigate immediately. Transfer to medical facility.<br>Skin: Remove victim from area immediately. Flush skin and clothes with bleach within 1 minute. Cut and remove contaminated clothing, then wash skin again with bleach and then with soap and water. Transfer to medical facility.<br>Breath: Remove from area immediately. Transfer to medical facility. |   | C0.003 mg/m <sup>3</sup>  | AEL                 | 0.5 mg/m <sup>3</sup>        |
| Portland cement                 |                         |                             | Inh                | Fine gray powder that can be irritating if inhaled or in eyes.   | Eye: Irrigate immediately<br>Skin: Soap wash immediately<br>Breath: Respiratory support<br>Swallow: Immediate medical attention   |   | 10 mg/m <sup>3</sup><br>10 mg/m <sup>3</sup> /<br>total dust<br>5 mg/m <sup>3</sup><br>respirable<br>fraction | TLV<br>PEL/REL      |                              |
| Sodium hydroxide<br>[1310-73-2] | NA                      | NA                          | Inh<br>Ing<br>Con  | Irritated nose; pneumonitis; burns eyes, and skin; temporary loss of hair.   | Eye: Irrigate immediately<br>Skin: Water flush immediately<br>Breath: Respiratory support<br>Swallow: Immediate medical attention   |   | C2 mg/m <sup>3</sup><br>C2 mg/m <sup>3</sup><br>C2 mg/m <sup>3</sup>  | PEL<br>TLV<br>REL   | 250 mg/m <sup>3</sup>        |
| Sulfuric acid<br>[7664-93-9]    | ?                       | 0.15                        | Inh<br>Ing<br>Con  | Irritated eyes, nose, and throat; pulmonary edema, bronchitis; emphysema; conjunctivitis; stomatitis; dental erosion; tracheobronchitis; skin and eye burns; dermatitis.       | Eye: Irrigate immediately<br>Skin: Water flush immediately<br>Breath: Respiratory support<br>Swallow: Immediate medical attention   | 1 mg/m <sup>3</sup><br>1 mg/m <sup>3</sup><br>1 mg/m <sup>3</sup> | 3 mg/m <sup>3</sup>   | PEL<br>TLV<br>REL   | 80 mg/m <sup>3</sup>         |

Table 2-1

**Toxicological and Physical Properties of Chemicals  
Ammunition Supply Point and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 4 of 5)

| Substance<br>[CAS]                               | IP <sup>a</sup><br>(eV) | Odor<br>Threshold<br>(ppm) | Route <sup>b</sup>       | Symptoms of Exposure   | Treatment   | TWA <sup>c</sup>   | STEL <sup>d</sup>             | Source <sup>e</sup> | IDLH<br>(NIOSH) <sup>f</sup> |
|--|-------------------------|----------------------------|--------------------------|--|---|--|-------------------------------|---------------------|------------------------------|
| 2,4,6-Trinitrotoluene<br>(TNT)<br><br>[118-96-7] | 10.59                   | ?                          | Inh<br>Abs<br>Ing<br>Con | Liver damage, jaundice; cyanosis; sneezing coughing, sore throat; peripheral neuropathy, muscular pain; kidney damage; cataract; sensitive dermatitis; leukocytosis; anemia; cardiac irregularities.   | Eye: Irrigate immediately<br>Skin: Soap wash promptly<br>Breath: Respiratory support<br>Swallow: Immediate medical attention  | 0.5 mg/m <sup>3</sup> (skin)<br>0.5 mg/m <sup>3</sup> (skin)<br>0.5 mg/m <sup>3</sup> (skin) |                               | PEL<br>TLV<br>REL   | NE                           |
| VX   | ?                       | ?                          | Abs                      | Anticholinesterase agent producing cholinergic poisoning; tightness in chest, wheezing, increased bronchial secretion, cough, breathing difficulty, pulmonary edema, death; CNS depression, coma, convulsion; sweating; salivation, abdominal cramps, heartburn, belching, diarrhea, involuntary defecation. | Eye: Irrigate immediately. Transfer to medical facility<br>Skin: Remove victim from area immediately. Flush skin and clothes with bleach within 1 minute. Cut and remove contaminated clothing, then wash skin again with bleach and then with soap and water. Transfer to medical facility.<br>Breath: Remove from area immediately. Transfer to medical facility. |  | C0.00001<br>mg/m <sup>3</sup> | AEL                 | 0.4 mg/m <sup>3</sup>        |

<sup>a</sup>IP = Ionization potential (electron volts).<sup>b</sup>Route = Inh, Inhalation; Abs, Skin absorption; Ing, Ingestion; Con, Skin and/or eye contact.<sup>c</sup>TWA = Time-weighted average. The TWA concentration for a normal work day (usually 8 or 10 hours) and a 40-hour work week, to which nearly all workers may be repeatedly exposed, day after day without adverse effect.<sup>d</sup>STEL = Short-term exposure limit. A 15-minute TWA exposure that should not be exceeded at any time during a workday, even if the TWA is not exceeded.<sup>e</sup>PEL = Occupational Safety and Health Administration (OSHA) permissible exposure limit (29 CFR 1910.1000, Table Z).

AEL = Airborne Exposure Limit.

TLV = American Conference of Governmental Industrial Hygiene (ACGIH) threshold limit value—TWA.

REL = National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit.

<sup>f</sup>IDLH (NIOSH)—Immediately dangerous to life or health (NIOSH). Represents the maximum concentration from which, in the event of respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing or irreversible health effects.

NE = No evidence could be found for the existence of an IDLH (NIOSH Pocket Guide to Chemical Hazards, Pub. No. 97-140, 1997).

C = Ceiling limit value which should not be exceeded at any time.

Ca = Carcinogen.



**Table 2-1**

**Toxicological and Physical Properties of Chemicals  
Ammunition Supply Point and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 5 of 5)

NA = Not applicable.

? = Unknown.

LEL = Lower explosive limits.

LC<sub>50</sub> = Lethal concentration for 50 percent of population tested.

LD<sub>50</sub> = Lethal dose for 50 percent of population tested.

NIC = Notice of intended change (ACGIH).

**References:**

American Conference of Governmental Industrial Hygienists Guide to Occupational Exposure Values, 1998, compiled by the American Conference of Governmental Industrial Hygienists.

Amoore, J. E. Hautula, "Odor as an Aid to Chemical Safety," Journal of Applied Toxicology, 1983.

Clayton, George D., Clayton, F. E., Patty's Industrial Hygiene and Toxicology, 3rd ed., John Wiley & Sons, New York.

Documentation of TLVs and BEIs, American Conference of Governmental Industrial Hygienists, 6th ed., 1998.

Fazzuluri, F. A., Compilation of Odor and Taste Threshold Values Data, American Society for Testing and Materials, 1978.

Gemet, L. J. Van, Compilation of Odor Threshold Values in Air and Water, CIVO, Netherlands, 1977.

Gemet, L. J. Van, Compilation of Odor Threshold Values in Air and Water, Supplement IV, CIVO, Netherlands, 1977.

Lewis, Richard J., Sr., 1992, Sax's Dangerous Properties of Industrial Materials, 8th ed., Van Nostrand Reinhold, New York.

Micromedex Tomes Plus (R) System, 1992, Micromedex, Inc.

National Institute for Occupational Safety and Health Pocket Guide to Chemicals, Pub. No. 97-140, 1997, National Institute for Occupational Safety and Health.

Odor Threshold for Chemicals with Established Occupational Health Standards, American Industrial Hygiene Association, 1989.

Respirator Selection Guide, 3M Occupational Health and Safety Division, 1993.

Verschueren, K., Handbook of Environmental Data on Organic Chemicals, Van Nostrand and Reinhold, 1977.

Warning Properties of Industrial Chemicals—Occupational Health Resource Center, Oregon Lung Association.

Workplace Environmental Exposure Levels, American Industrial Hygiene Association, 1992.

### ***3.0 Personal Protective Equipment***

---

The work activities will begin in the following levels of protection. Also, a completed description of Level D, Modified Level D, and Level C PPE is provided.

| Task                  | Initial Level of PPE |
|-----------------------|----------------------|
| Staging equipment     | Level D              |
| Collecting samples    | Modified Level D*    |
| Conducting UXO survey | Level D*             |

\*Initial level will be raised to Level C or higher if air monitoring results in the worker's breathing zone (BZ) are greater than action levels.

\*\*Personnel will not wear steel-toed safety boots while conducting UXO surveys.

***Level D.*** The minimal level of protection that will be required of IT Corporation personnel at the site will be Level D. The following equipment will be used for Level D protection:

- Coveralls or work clothing
- Leather work gloves (when necessary)
- Steel-toed safety boots
- Safety glasses
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).

***Modified Level D.*** The following equipment will be used for Level D-Modified protection:

- Saran-coated tyvek or its equivalent
- Latex boot covers
- Nitrile, heavy work, or latex gloves
- Steel-toed safety boots
- Safety glasses
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).

Note: In addition to modifying Level D PPE, the operator of high-pressure water jetting equipment shall wear metatarsal guards for the legs and feet.

**Level C.** Level C protection will not be used unless air-monitoring data indicate the need for upgrade; however, the equipment shall be readily available on site. The following equipment will be used for Level C protection:

- National Institute of Occupational Safety and Health/Mine Safety and Health Administration-approved full-face, air-purifying respirators equipped with organic vapor/acid gas/P100 cartridge
- Hooded, Saran-coated Tyvek, taped at gloves, boots, and respirator
- Nitrile gloves (outer)
- Latex or lightweight nitrile gloves (inner)
- Neoprene steel-toed boots or polyvinyl chloride overbooties/steel-toed safety boots
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).

Note: In addition to Level C PPE, the operator of high-pressure water jetting equipment shall wear metatarsal guards for the legs and feet.

## ***4.0 Site Monitoring***

---

The potential environmental contaminants of concern resulting from the ASP and Building 4416, operations are GB, VX, red phosphorus, mustard gas, cesium-37, hydrogen-3, and trinitrotoluene. Table 4-1 contains action levels for site monitoring at the ASP and Building 4416.

Monitoring will be performed by the site safety and health officer (SSHO) during the performance of ground-intrusive operations. A calibrated photoionization detector (PID) (i.e., photovac 2020 PID or equivalent) organic vapor analyzer will be utilized to monitor the sampling locations and BZs to determine if any organic material may be present that would necessitate upgrading of protection level. A calibrated Geiger counter (Ludlum Model 3 with a pancake G-M probe or equivalent) indicator will be utilized to monitor the sampling locations and BZ to determine if any radiological levels are present that would necessitate evacuation of the work area. Table 4-2 contains the air monitoring frequency and location for site monitoring at the ASP and Building 4416.

**Table 4-1**

**Action Levels**  
**Ammunition Supply Point and Building 4146, Parcels 197(7) and 199(7)**  
**Fort McClellan, Calhoun County, Alabama**

When in Level C PPE

| Analyte   | Action Level  | Required Action <sup>a</sup>                       |
|-----------|---|--|
| VOHs      | $\geq 10$ ppm above background in breathing zone (BZ) | Stop work, evacuate work area, upgrade to Level B. |
| Radiation | Twice the established background level                | Stop work, evacuate work area.                     |

When in Level D Modified/D PPE

| Analyte   | Action Level                           | Required Action <sup>b</sup>  |
|-----------|--|---|
| VOHs      | $\geq 5$ ppm above background in BZ    | Stop activities, suspend work activities for 15 to 30 minutes, if readings are sustained then upgrade to Level C PPE. |
| Radiation | Twice the established background level | Stop work, evacuate work area.  |

When in Support Zone

| Analyte | Action Level                        | Required Action   |
|---------|-------------------------------------|---|
| VOHs    | $\geq 1$ ppm above background in BZ | Evacuate support zone and re-establish perimeter of exclusion zone. |

<sup>a</sup> Four instantaneous peaks in any 15-minute period or a sustained reading for 5 minutes in excess of the action level will trigger a response.

<sup>b</sup> Contact with the H&S manager must be made prior to continuance of work. The H&S manager may then initiate perimeter/integrated air sampling along with additional engineering controls.

**No one is permitted to downgrade levels of PPE without authorization from the H&S manager.**

**Table 4-2**

**Air Monitoring Frequency and Location  
Ammunition Supply Point and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan, Calhoun County, Alabama**

| Work Activity  | Instrument       | Frequency                    | Location                            |
|--|------------------|------------------------------|-------------------------------------|
| Staging equipment  | OV Monitor       | Initially for area           | Breathing zone<br>(BZ) of employees |
| Sampling (groundwater, surface water,<br>sediment, and soil) | OV Monitor<br>GC | Continuously<br>Continuously | BZ of employees<br>Support zone     |

OV = Organic vapor.  
GC = Geiger Counter.

## ***5.0 Activity Hazard Analysis***

---

The attached activity hazard analysis (Table 5-1) is provided for the following activities:

- Setup of equipment and general field activities
- Soil, surface water, sediment, and groundwater sampling.

All injuries and illnesses must be immediately reported to the site manager or the SSHO, who will then notify off-site personnel and organizations as necessary.

If hospital care must be provided, the victim shall be treated at Northeast Regional Medical Center. Directions to the hospital are provided in Figure 1-1.

**Table 5-1**

**Activity Hazard Analysis  
Ammunition Supply Point and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 14)

| Activity          | Potential Hazards               | Recommended Controls  |
|-------------------|---------------------------------|---|
| Staging Equipment | Slip, trip, and fall hazards    | <ul style="list-style-type: none"> <li>Determine best access route before transporting equipment.</li> <li>Practice good housekeeping; keep work area picked up and clean as feasible.</li> <li>Continually inspect the work area for slip, trip, and fall hazards.</li> <li>Look before you step; ensure safe and secure footing.</li> </ul> |
|                   | Heavy lifting                   | <ul style="list-style-type: none"> <li>Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment.</li> </ul>   |
|                   | Falling objects                 | <ul style="list-style-type: none"> <li>Stay alert and clear of materials suspended overhead; wear hard hat and steel-toed boots.</li> </ul>   |
|                   | Flying debris, dirt, dust, etc. | <ul style="list-style-type: none"> <li>Wear safety glasses/goggles; ensure that eye wash is in proper working condition.</li> </ul>   |
|                   | Pinch points                    | <ul style="list-style-type: none"> <li>Keep hands, fingers, and feet clear of moving/suspended materials and equipment.</li> <li>Beware of contact points.</li> <li>Stay alert at all times!</li> </ul>   |
|                   | Cuts/bruises                    | <ul style="list-style-type: none"> <li>Use cotton or leather work gloves for material handling.</li> </ul>  |
|                   | Bees, spiders, and snakes       | <ul style="list-style-type: none"> <li>Inspect work area carefully and avoid placing hands and feet into concealed areas.</li> </ul>  |
|                   | Ticks                           | <ul style="list-style-type: none"> <li>Wear light colored clothing (can see ticks better).</li> <li>Mow vegetated and small brush areas.</li> <li>Wear insect repellent.</li> <li>Wear long sleeves and long pants.</li> <li>Visually check oneself promptly and frequently after exiting the work area.</li> </ul>                           |
|                   | Fire                            | <ul style="list-style-type: none"> <li>Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>   |
|                   | Hazard communication            | <ul style="list-style-type: none"> <li>Label all containers as to contents and dispose of properly.</li> <li>Ensure Material Safety Data Sheets (MSDS) are available for hazardous chemicals used on site.</li> </ul>   |



**Table 5-1**

**Activity Hazard Analysis  
Ammunition Supply Point and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 14)

| Activity                      | Potential Hazards    | Recommended Controls  |
|-------------------------------|----------------------|---|
| Staging Equipment (continued) | Noise                | <ul style="list-style-type: none"> <li>• Sound levels above 85 decibels (dBA) mandates hearing protection.</li> </ul>   |
|                               | Lighting             | <ul style="list-style-type: none"> <li>• Adequate lighting will be provided to ensure a safe working environment.</li> </ul>  |
|                               | Cold stress          | <ul style="list-style-type: none"> <li>• Workers should wear insulated clothing when temperatures drop below 40 degrees Fahrenheit (°F).</li> <li>• Drink warm beverages on breaks. Refrain from drinking caffeinated beverages.</li> <li>• Remove wet clothing promptly.</li> <li>• Take breaks in warm areas.</li> <li>• Reduce work periods as necessary.</li> <li>• Layer work clothing.</li> </ul> |
|                               | Poison ivy/oak/sumac | <ul style="list-style-type: none"> <li>• Avoid plant areas if possible.</li> <li>• Wear long sleeves and long pants.</li> <li>• Promptly wash clothing that has contacted poisonous plants.</li> <li>• Wash affected areas immediately with soap and water.</li> </ul>  |
|                               | Heat rash            | <ul style="list-style-type: none"> <li>• Keep the skin clean and dry.</li> <li>• Change perspiration-soaked clothing, as necessary.</li> <li>• Bathe at end of work shift or day.</li> <li>• Apply powder to affected area.</li> </ul>  |
|                               | Heat cramps          | <ul style="list-style-type: none"> <li>• Drink plenty of cool fluids even when not thirsty.</li> <li>• Provide cool fluid for work crews.</li> <li>• Move victim to shaded, cool area.</li> </ul>   |
|                               | Heat exhaustion      | <ul style="list-style-type: none"> <li>• Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature).</li> <li>• Set up work/rest periods.</li> <li>• Use the "buddy system."</li> <li>• Allow workers time to acclimate.</li> <li>• Have ice packs available for use.</li> <li>• Take frequent breaks.</li> </ul>   |

**Table 5-1**

**Activity Hazard Analysis  
Ammunition Supply Point and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 3 of 14)

| Activity                      | Potential Hazards                      | Recommended Controls   |
|-------------------------------|--|--|
| Staging Equipment (continued) | Heat stroke                            | <ul style="list-style-type: none"><li>• Evaluate possibility of night work.</li><li>• Perform physiological monitoring on workers during breaks.</li><li>• Wear body cooling devices.</li></ul>  |
|                               | Contact with moving equipment/vehicles | <ul style="list-style-type: none"><li>• Work area will be barricaded/demarcated.</li><li>• Equipment will be laid out in an area free of traffic flow.</li><li>• Barricades shall be used on or around work areas when it is necessary to prevent the inadvertent intrusion of pedestrian traffic.</li><li>• Barriers shall be used to protect workers from vehicular traffic.</li><li>• Barriers shall be used to guard excavations adjacent to streets or roadways.</li><li>• Flagging shall be used for the short term (less than 24 hours) to identify hazards until proper barricades or barriers are provided.</li><li>• Heavy equipment shall have backup alarms.</li></ul> |
|                               | Forklift operations                    | <ul style="list-style-type: none"><li>• Use qualified and trained forklift operators.</li><li>• The operator shall not exceed the load capacity rating for the forklift.</li><li>• The load capacity shall be clearly visible on the forklift.</li><li>• Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.</li></ul>   |
|                               | Portable electric tools                | <ul style="list-style-type: none"><li>• Portable electric tools that are unsafe due to faulty plugs, damaged cords, or other reasons, shall be tagged (do not use) and removed from service.</li><li>• Portable electric tools and all cord and plug connected equipment shall be protected by a ground-fault circuit interrupter (GFCI) device.</li><li>• Electrical tools shall be inspected daily prior to use.</li></ul>   |

**Table 5-1**

**Activity Hazard Analysis  
Ammunition Supply Point and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 4 of 14)

| Activity                      | Potential Hazards            | Recommended Controls   |
|-------------------------------|------------------------------|--|
| Staging Equipment (continued) | Extension cords              | <ul style="list-style-type: none"> <li>• Extension cords that have faulty plugs, damaged insulation, or are unsafe in any way shall be removed from service.</li> <li>• Cords shall be protected from damage from sharp edges, projections, pinch points (doorways), and vehicular traffic.</li> <li>• Cords shall be suspended with a nonconductive support (rope, plastic ties, etc.).</li> <li>• Cords shall be designed for hard duty.</li> <li>• Cords shall be inspected daily.</li> </ul>   |
|                               | Lightning strikes            | <ul style="list-style-type: none"> <li>• Whenever possible, halt activities and take cover.</li> <li>• If outdoors, stay low to the ground.</li> <li>• Limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than laying on the ground).</li> <li>• Seek shelter in a building if possible.</li> <li>• Stay away from windows.</li> <li>• If available, crouch under a group of trees instead of one.</li> <li>• Keep all body parts in contact with the ground as close as possible.</li> <li>• Remain 6 feet away from tree trunk if seeking shelter beneath tree(s).</li> <li>• If in a group, keep 6 feet of distance between people.</li> </ul>                                    |
|                               | Thunderstorms, tornadoes     | <ul style="list-style-type: none"> <li>• Listen to radio or TV announcements for pending weather information.</li> <li>• Cease field activities during thunderstorm or tornado warnings.</li> <li>• Seek shelter. Do not try to outrun a tornado.</li> </ul>   |
| Surveying                     | Slip, trip, and fall hazards | <ul style="list-style-type: none"> <li>• Site workers will be required to wear hard hat, safety glasses with side shields, work gloves, and steel-toe boots when working in the field.</li> <li>• Provide adequate lighting in all work areas.</li> <li>• Whenever possible, avoid routing cords and hoses across walking pathways.</li> <li>• Flag or cover inconspicuous holes to protect against falls.</li> <li>• Work areas will be kept clean and orderly.</li> <li>• Garbage and trash will be disposed of daily in approved refuse containers.</li> <li>• Tools and accessories will be properly maintained and stored.</li> <li>• Work areas and floors will be kept free of dirt, grease, and slippery materials.</li> </ul> |

**Table 5-1**

**Activity Hazard Analysis  
Ammunition Supply Point and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 5 of 14)

| Activity              | Potential Hazards    | Recommended Controls  |
|-----------------------|----------------------|---|
| Surveying (continued) | Traffic accidents    | <ul style="list-style-type: none"><li>• Place physical barrier (i.e., barricades, fencing) around work areas regularly occupied by pedestrians.</li><li>• If working adjacent to roadways, have workers wear fluorescent orange vests.</li><li>• Use warning signs or lights to alert oncoming traffic.</li><li>• Assign flag person(s) if necessary to direct local traffic.</li><li>• Set up temporary parking locations outside the immediate work area.</li><li>• Motor vehicle operators shall obey all posted traffic signs, signals, and speed limits.</li><li>• Pedestrians have the right-of-way.</li><li>• Wear seat belts when vehicles are in motion.</li></ul> |
|                       | Wildlife hazards     | <ul style="list-style-type: none"><li>• Workers should be cautious when driving through the site in order to avoid encounters with passing animals.</li></ul>   |
|                       | Biological hazards   | <ul style="list-style-type: none"><li>• Walking through overgrown grass areas, watch for snakes (rattlesnakes, moccasins, copperheads).</li></ul>   |
|                       | Ticks                | <ul style="list-style-type: none"><li>• Wear light colored clothing (can see ticks better).</li><li>• Mow vegetated and small brush areas.</li><li>• Wear insect repellent.</li><li>• Wear long sleeves and long pants.</li><li>• Visually check oneself promptly and frequently after exiting the work area.</li></ul>   |
|                       | Poison ivy/oak/sumac | <ul style="list-style-type: none"><li>• Avoid plant areas if possible.</li><li>• Wear long sleeves and long pants.</li><li>• Promptly wash clothing that has contacted poisonous plants.</li><li>• Wash affected areas immediately with soap and water.</li></ul>   |

**Table 5-1**

**Activity Hazard Analysis  
Ammunition Supply Point and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 6 of 14)

| Activity             | Potential Hazards   | Recommended Controls  |
|----------------------|---|---|
| Groundwater Sampling | Cross-contamination and contact with potentially contaminated materials | <ul style="list-style-type: none"> <li>• Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination.</li> <li>• Avoid skin contact with water.</li> <li>• Handle samples with care.</li> <li>• Only essential personnel will be in the work area.</li> <li>• Real-time air monitoring will take place before and during sampling activities.</li> <li>• All personnel will follow good hygiene practices.</li> <li>• Proper decontamination procedures will be followed.</li> <li>• All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.</li> </ul> |
|                      | Cut hazards   | <ul style="list-style-type: none"> <li>• Use care when handling glassware.</li> <li>• Wear adequate hand protection.</li> </ul>   |
|                      | Hazard communication  | <ul style="list-style-type: none"> <li>• MSDSs shall be obtained for chemicals brought on site.</li> <li>• Label all containers as to contents.</li> </ul>  |
|                      | Strains/sprains   | <ul style="list-style-type: none"> <li>• Use the proper tool for the job being performed.</li> <li>• Get assistance if needed.</li> <li>• Avoid twisting/turning while pulling on tools, moving equipment, etc.</li> </ul>  |
|                      | Spills/residual materials   | <ul style="list-style-type: none"> <li>• Absorbent material and containers will be kept available where leaks or spills may occur.</li> </ul>   |
|                      | Lighting  | <ul style="list-style-type: none"> <li>• Adequate lighting will be provided to ensure a safe working environment.</li> </ul>  |
|                      | Unattended worker   | <ul style="list-style-type: none"> <li>• Use "buddy system" - visual contact will be maintained with the sampling technician during sampling activities.</li> </ul>   |

**Table 5-1**

**Activity Hazard Analysis  
Ammunition Supply Point and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 7 of 14)

| Activity                                    | Potential Hazards   | Recommended Controls   |
|---|---|--|
| Soil Boring and Surface/Subsurface Sampling | Cross-contamination and contact with potentially contaminated materials | <ul style="list-style-type: none"> <li>• Stop immediately at any sign of obstruction.</li> <li>• Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination.</li> <li>• Only essential personnel will be in the work area.</li> <li>• Real-time air monitoring will take place before and during sampling activities.</li> <li>• All personnel will follow good hygiene practices.</li> <li>• Proper decontamination procedures will be followed.</li> <li>• All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.</li> </ul> |
|   | Cut hazards   | <ul style="list-style-type: none"> <li>• Use care when handling glassware.</li> <li>• Wear adequate hand protection.</li> </ul>  |
|   | Slip, trip, and fall hazards  | <ul style="list-style-type: none"> <li>• Site workers will be required to wear hard hat, safety glasses with side shields, work gloves, and steel-toe/shank boots when working in the field.</li> <li>• Whenever possible, avoid routing cords and hoses across walking pathways.</li> <li>• Flag or cover inconspicuous holes to protect against falls.</li> </ul>  |
|   | Bees, spiders, and snakes   | <ul style="list-style-type: none"> <li>• Workers shall inspect the work area carefully and avoid placing hands and feet into concealed areas.</li> <li>• Evaluate need for sensitive workers to have prescribed antibiotic or medicine to combat onset of symptoms.</li> </ul>   |
|   | Poison ivy/oak/sumac  | <ul style="list-style-type: none"> <li>• Avoid plant areas if possible.</li> <li>• Wear long sleeves and long pants.</li> <li>• Promptly wash clothing that has contacted poisonous plants.</li> <li>• Wash affected areas immediately with soap and water.</li> </ul>   |
|   | Cold stress   | <ul style="list-style-type: none"> <li>• Workers should wear insulated clothing when temperatures drop below 40°F.</li> <li>• Drink warm beverages on breaks. Refrain from drinking caffeinated beverages.</li> <li>• Remove wet clothing promptly.</li> <li>• Take breaks in warm areas.</li> <li>• Reduce work periods as necessary.</li> <li>• Layer work clothing.</li> </ul>  |

**Table 5-1**

**Activity Hazard Analysis  
Ammunition Supply Point and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 8 of 14)

| Activity  | Potential Hazards     | Recommended Controls  |
|---|-----------------------|---|
| Soil Boring and Surface/Subsurface Sampling (continued) | Access/egress hazards | <ul style="list-style-type: none"><li>• Use qualified and trained bushhog operator.</li><li>• Keep employees out of the bushhog work area.</li><li>• Utilize good housekeeping practices.</li><li>• Keep aisleways, pathways, and work areas free of obstruction.</li><li>• Clean ice or snow off of walkways or work stations.</li><li>• Use appropriate footwear for the task assigned.</li></ul> |
|   | Heat rash             | <ul style="list-style-type: none"><li>• Keep the skin clean and dry.</li><li>• Change perspiration-soaked clothing, as necessary.</li><li>• Bathe at end of work shift or day.</li><li>• Apply powder to affected area.</li></ul>   |
|   | Heat cramps           | <ul style="list-style-type: none"><li>• Drink plenty of cool fluids even when not thirsty.</li><li>• Provide cool fluid for work crews.</li><li>• Move victim to shaded, cool area.</li></ul>   |
|   | Heat exhaustion       | <ul style="list-style-type: none"><li>• Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature).</li><li>• Set up work/rest periods.</li><li>• Use the buddy system.</li><li>• Allow workers time to acclimate.</li><li>• Have ice packs available for use.</li><li>• Take frequent breaks.</li></ul>  |
|   | Heat stroke           | <ul style="list-style-type: none"><li>• Evaluate possibility of night work.</li><li>• Perform physiological monitoring on workers during breaks.</li><li>• Wear body-cooling devices.</li></ul>   |

**Table 5-1**

**Activity Hazard Analysis  
Ammunition Supply Point and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 9 of 14)

| Activity  | Potential Hazards    | Recommended Controls  |
|---|----------------------|---|
| Soil Boring and Surface/Subsurface Sampling (continued) | Lightning strikes    | <ul style="list-style-type: none"> <li>• Whenever possible, halt activities and take cover.</li> <li>• If outdoors, stay low to the ground.</li> <li>• Limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than laying on the ground).</li> <li>• Seek shelter in a building if possible.</li> <li>• Stay away from windows.</li> <li>• If available, crouch under a group of trees instead of one single tree.</li> <li>• Keep all body parts in contact with the ground as close as possible.</li> <li>• If in a group, keep 6 feet of distance between people.</li> </ul> |
| Surface Water/Sediment Sampling                         | Drowning             | <ul style="list-style-type: none"> <li>• Personal flotation devices (PFD) will be provided and worn over or near water where the danger of drowning exists.</li> <li>• PFDs shall be inspected prior to and after each use.</li> <li>• Defective PFDs will be tagged and removed from service.</li> <li>• Ring buoys with at least 90 feet of line shall be provided and readily available at locations where employees are working over or adjacent to water.</li> <li>• Use the buddy system.</li> <li>• Personnel trained in launching and operating the skiff shall be readily available during work hours..</li> </ul>   |
| Moving and Shipping Collected Samples                   | Heavy lifting        | <ul style="list-style-type: none"> <li>• Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.</li> </ul>   |
|   | Pinch points         | <ul style="list-style-type: none"> <li>• Keep hands, fingers, and feet clear of moving/suspended materials and equipment.</li> <li>• Beware of contact points.</li> <li>• Stay alert at all times!</li> </ul>   |
|   | Cut hazards          | <ul style="list-style-type: none"> <li>• Wear adequate hand protection. Use care when handling glassware.</li> </ul>  |
|   | Hazard communication | <ul style="list-style-type: none"> <li>• Label all containers as to contents and associated hazards.</li> </ul>   |
|   | Heavy lifting        | <ul style="list-style-type: none"> <li>• Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.</li> </ul>   |



**Table 5-1**

**Activity Hazard Analysis  
Ammunition Supply Point and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 10 of 14)

| Activity   | Potential Hazards   | Recommended Controls   |
|--|---|--|
| Material Storage   | Flammable and combustible liquids                                       | <ul style="list-style-type: none"> <li>• Store in NO SMOKING AREA.</li> <li>• Fire extinguisher readily available.</li> <li>• Transfer only when properly grounded and bonded.</li> </ul>  |
| Disposal of Investigation-Derived Waste (IDW) (Forklift Operation) | Personnel injury, property damage, and/or equipment damage              | <ul style="list-style-type: none"> <li>• Use qualified and trained forklift operators.</li> <li>• The operator shall not exceed the load capacity rating for the forklift.</li> <li>• The load capacity shall be clearly visible on the forklift.</li> <li>• Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.</li> </ul>  |
|  | Cross-contamination and contact with potentially contaminated materials | <ul style="list-style-type: none"> <li>• Stop immediately at any sign of obstruction.</li> <li>• Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination.</li> <li>• Only essential personnel will be in the work area.</li> <li>• Real-time air monitoring will take place before and during sampling activities.</li> <li>• All personnel will follow good hygiene practices.</li> <li>• Proper decontamination procedures will be followed.</li> <li>• All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.</li> </ul> |
|  | Cut hazards   | <ul style="list-style-type: none"> <li>• Use care when handling glassware.</li> <li>• Wear adequate hand protection.</li> </ul>  |
| High-Pressure Water Jetting Operations                             | Heavy lifting   | <ul style="list-style-type: none"> <li>• Use proper lifting techniques.</li> <li>• Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.</li> </ul>   |
|  | Slip, trip, and fall hazards  | <ul style="list-style-type: none"> <li>• Good housekeeping shall be implemented.</li> <li>• The work area shall be kept clean as feasible.</li> <li>• Inspect the work area for slip, trip, and fall hazards.</li> </ul>   |

**Table 5-1**

**Activity Hazard Analysis  
Ammunition Supply Point and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 11 of 14)

| Activity   | Potential Hazards           | Recommended Controls   |
|--|-----------------------------|--|
| High-Pressure Water Jetting Operations (continued) | Fueling                     | <ul style="list-style-type: none"><li>• Only approved safety cans shall be used to store fuel.</li><li>• Do not refuel equipment while it is operating.</li><li>• Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li></ul>  |
|  | Faulty or damaged equipment | <ul style="list-style-type: none"><li>• Equipment shall be inspected before being placed into service and at the beginning of each shift.</li><li>• Preventive maintenance procedures recommended by the manufacturer shall be followed.</li><li>• A lockout/tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.</li></ul>  |
|  | High-pressure water         | <ul style="list-style-type: none"><li>• Jetting gun operator must wear appropriate PPE including hard hat, impact-resistant safety glasses with side shields, water-resistant clothing, metatarsal guards for feet and legs, and hearing protection (if appropriate).</li><li>• One standby person shall be available within the vicinity of the pump during jetting operation.</li><li>• The work area shall be isolated and adequate barriers will be used to warn other site personnel.</li></ul> |
|  | Unqualified operators       | <ul style="list-style-type: none"><li>• Only qualified and trained personnel are permitted to operate machinery and mechanized equipment associated with water jet cutting and cleaning.</li></ul>   |
|  | Out of control equipment    | <ul style="list-style-type: none"><li>• No machinery or equipment is permitted to run unattended.</li><li>• Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.</li></ul>  |
|  | Noise                       | <ul style="list-style-type: none"><li>• Sound levels above 85 dBA mandates hearing protection by nearby site personnel.</li></ul>  |
|  | Activation during repairs   | <ul style="list-style-type: none"><li>• All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.</li></ul>  |

**Table 5-1**

**Activity Hazard Analysis  
Ammunition Supply Point and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 12 of 14)

| Activity   | Potential Hazards  | Recommended Controls   |
|--|--|--|
| High-Pressure Water Jetting Operations (continued) | Pinch points   | <ul style="list-style-type: none"> <li>Keep feet and hands clear of moving/suspended materials and equipment.</li> <li>Stay alert and clear of materials suspended.</li> </ul>   |
|  | Falling objects  | <ul style="list-style-type: none"> <li>Hard hats are required by site personnel.</li> <li>Stay alert and clear of material suspended overhead.</li> </ul>  |
|  | Flying debris  | <ul style="list-style-type: none"> <li>Impact-resistant safety glasses with side shields are required.</li> </ul>  |
|  | Contact with potentially contaminated materials                                    | <ul style="list-style-type: none"> <li>All site personnel will wear the appropriate PPE.</li> </ul>  |
| Hydropunch Sampling                                | Faulty or damaged equipment being utilized to perform work                         | <ul style="list-style-type: none"> <li>All machinery or mechanized equipment will be inspected by a competent mechanic and certified to be in safe operating condition.</li> <li>Equipment will be inspected before use and at the beginning of each shift.</li> <li>Faulty/unsafe equipment will be tagged and if possible locked out.</li> <li>Drill rigs shall be equipped with reverse signal alarm, backup warning lights, or the vehicle is backed up only when an observer signals it is safe to do so.</li> </ul>  |
|  | Uneven terrain, poor ground support, inadequate clearances, contact with utilities | <ul style="list-style-type: none"> <li>Inspections or determinations of road conditions and structures shall be made in advance to ensure that clearances and load capacities are safe for the passage or placing of any machinery or equipment.</li> <li>All mobile equipment and areas in which they are operated shall be adequately illuminated.</li> <li>Whenever the equipment is parked, the parking brake shall be set.</li> <li>Equipment parked on inclines will have the wheels chocked.</li> <li>Inspect brakes and tire pressure on drill rig before staging for work.</li> <li>Obtain trenching/drilling permit prior to operation.</li> </ul> |
|  | Inexperienced operator   | <ul style="list-style-type: none"> <li>Machinery and mechanized equipment shall be operated only by designated personnel.</li> <li>Heavy equipment operators shall inform their supervisor(s) of any prescribed medication that they are taking that would impair their judgement.</li> </ul>  |
|  | Jacks/outriggers   | <ul style="list-style-type: none"> <li>Ensure proper footing and cribbing.</li> </ul>  |
|  | Falling objects  | <ul style="list-style-type: none"> <li>Remove unsecured tools and materials before raising or lowering the derrick.</li> <li>Stay alert and clear of materials suspended overhead.</li> </ul>  |

**Table 5-1**

**Activity Hazard Analysis  
Ammunition Supply Point and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 13 of 14)

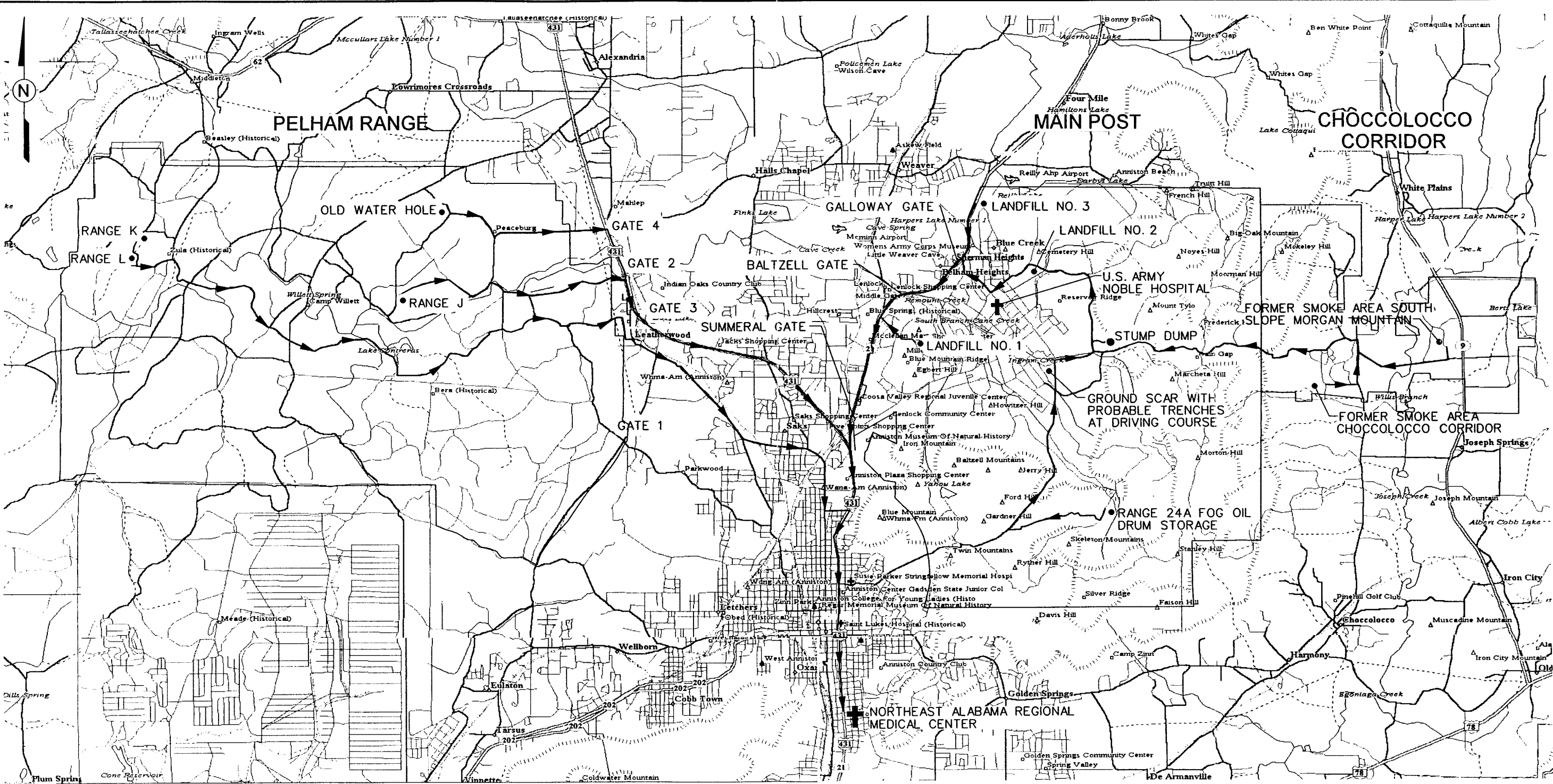
| Activity                        | Potential Hazards                                   | Recommended Controls   |
|---------------------------------|---|--|
| Hydropunch Sampling (continued) | Pinch points  | <ul style="list-style-type: none"> <li>Keep feet and hands clear of moving/suspended materials and equipment.</li> <li>Stay alert at all times!</li> </ul>   |
|                                 | Fire  | <ul style="list-style-type: none"> <li>Mechanized equipment shall be shut down prior to and during fueling operations.</li> <li>Have fire extinguishers inspected and readily available.</li> </ul>  |
|                                 | Fall hazards  | <ul style="list-style-type: none"> <li>Personnel are not allowed to work off of machinery or use them as ladders.</li> <li>Use fall protection when working above 6 feet.</li> </ul>   |
|                                 | Noise   | <ul style="list-style-type: none"> <li>Hearing protection is mandatory above 85 dBA.</li> </ul>  |
|                                 | Contact with rotating or reciprocating machine part | <ul style="list-style-type: none"> <li>Use machine guards; use long-handled shovels to remove auger cuttings.</li> <li>Safe lockout procedures for maintenance work.</li> </ul>  |
|                                 | Heavy lifting                                       | <ul style="list-style-type: none"> <li>Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.</li> </ul>  |
|                                 | Slip, trip, and fall hazards                        | <ul style="list-style-type: none"> <li>Practice good housekeeping; keep work area picked up and clean as feasible.</li> <li>Continually inspect the work area for slip, trip, and fall hazards.</li> </ul>   |
|                                 | Contact with potentially contaminated materials     | <ul style="list-style-type: none"> <li>Real-time air monitoring will take place. If necessary, proper personal protective clothing and equipment will be utilized.</li> </ul>  |
| Surveying for UXO               | Slip, trip, and fall hazards                        | <ul style="list-style-type: none"> <li>Site workers will be required to wear safety glasses with side shields, and work boots when working in the field.</li> <li>Provide adequate lighting in all work areas.</li> <li>Flag or cover inconspicuous holes to protect against falls.</li> <li>Work areas will be kept clean and orderly.</li> <li>Tools and accessories will be properly maintained and stored.</li> </ul>  |
|                                 | Traffic accidents                                   | <ul style="list-style-type: none"> <li>Place physical barrier (i.e., barricades, fencing) around work areas regularly occupied by pedestrians.</li> <li>If working adjacent to roadways, have workers wear fluorescent orange vests.</li> <li>Use warning signs or lights to alert oncoming traffic.</li> <li>Motor vehicle operators shall obey all posted traffic signs, signals, and speed limits.</li> <li>Pedestrians have the right-of-way.</li> <li>Wear seat belts when vehicles are in motion.</li> </ul> |

**Table 5-1**

**Activity Hazard Analysis  
Ammunition Supply Point and Building 4416, Parcels 197(7) and 199(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 14 of 14)

| Activity                      | Potential Hazards    | Recommended Controls   |
|-------------------------------|----------------------|--|
| Surveying for UXO (continued) | Wildlife hazards     | <ul style="list-style-type: none"><li>Workers should be cautious when walking through the site in order to avoid encounters with animals.</li></ul>  |
|                               | Biological hazards   | <ul style="list-style-type: none"><li>When walking through overgrown grass areas, watch for snakes (rattlesnakes, moccasins, copperheads).</li></ul>   |
|                               | Ticks                | <ul style="list-style-type: none"><li>Wear light colored clothing (can see ticks better).</li><li>Wear insect repellent.</li><li>Wear long sleeves and long pants.</li><li>Visually check oneself promptly and frequently after exiting the work area.</li></ul> |
|                               | Poison Ivy/oak/sumac | <ul style="list-style-type: none"><li>Avoid plant areas if possible.</li><li>Wear long sleeves and long pants.</li><li>Promptly wash clothing that has contacted poisonous plants.</li><li>Wash affected areas immediately with soap and water.</li></ul>        |
|                               | UXO                  | <ul style="list-style-type: none"><li>UXO specialist will conduct UXO avoidance operations.</li></ul>  |



LEGEND:

ROUTE TO NORTHEAST ALABAMA  
REGIONAL MEDICAL CENTER

U.S. HIGHWAY

HOSPITALS

INVESTIGATION SITES

FIGURE 1-1  
HOSPITAL EMERGENCY ROUTES

U. S. ARMY CORPS OF ENGINEERS  
MOBILE DISTRICT  
FORT MCLELLAN  
CALHOUN COUNTY, ALABAMA  
Contract No. DACA21-96-D-0018

